

REMARKS

With the foregoing amendments to the specification, Applicants amend the related applications section to include the U.S. patent application numbers of concurrently filed, related applications. Applicants have also amended claims 1, 4-12, 14, and 16-25 to further clarify Applicants' invention and to place the claims in a format suitable for allowance. No new matter is introduced by these amendments.

In response to the Office Action mailed September 29, 2006, Applicants respectfully request reconsideration. Claims 1-25 are pending in the application of which claims 1, 9, 14, and 20, are independent. The Examiner rejected claims 20-25 under 35 U.S.C. § 101, claims 14-25 under 35 U.S.C. § 102, and claims 1-13 under 35 U.S.C. § 103.

Rejections Under 35 U.S.C. § 101

In the Office Action, the Examiner rejected claims 20-25 under 35 U.S.C. § 101 stating that the medium contains contain both tangible and intangible embodiments. Applicants disagree with the rejection under 35 U.S.C. § 101 since independent claim 20 falls within one of the enumerated categories of patentable subject matter (i.e., process, machine, manufacture, or composition of matter) and the Examiner has failed to present a *prima facie* case that the claimed invention falls within one of the judicial exceptions to 35 U.S.C. § 101 (law of nature, natural phenomena, or abstract idea).

Applicants object to the use of a "tangible embodiment" test for deciding whether subject matter falls into one of the enumerated categories since no such test has been judicially accepted nor suggested in the MPEP. In fact, intangible embodiments have been found to be statutory where they are directed to a practical

application. See *O'Reilly v. Morse*, 56 U.S. 62, 114–19; *In re Breslow*, 616 F.2d 516, 519–21, 205 U.S. P.Q. 221, 225–26 (CCPA 1980).

Applicants maintain that the claimed invention does not fall within one of the judicial exceptions to 35 U.S.C. § 101. However, even if Applicants' claims fall within such an exception, they are a practical application and are statutory because they produce a useful, tangible, and concrete result. See *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 22 USPQ2d 1033 (Fed. Cir. 1992). Independent claim 20 produces a useful, concrete, and tangible result-- updates to the virtualization database and updates to the mapping contained in the objects. For these reasons, Applicants respectfully request the rejection under 35 U.S.C. § 101 of claim 20 as well as 21-25, which depend therefrom, to be withdrawn.

Rejections Under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 14-25 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,790,775 by Marks et al. ("Marks"). This rejection should be withdrawn because independent claims 14 and 20 patentably distinguish over Marks. To properly establish that a prior art reference anticipates a claimed invention under 35 U.S.C. § 102, each and every element of the claims in issue must be found, either expressly described or under principles of inherency, in the single prior art reference. See MPEP § 2131. Marks does not disclose each and every element of independent claims 14 and 20.

Claim 14

Marks does not disclose or suggest a "means for storing information about a state of the at least one storage device in a virtualization database," as recited in claim

14. Applicants respectfully disagree with the Examiner's equating of Marks' parameter store 56 with Applicants' "means for storing information about a state of the at least one storage device in a virtualization database." See Office Action at page 8.

First, Marks' parameter store 56 does not contain information about the state of a storage device. At col. 7, Marks describes the type of information that is stored to implement his invention. Specifically, Marks discloses that controller configuration information, such as the controller ID, is entered by the user and stored in non-volatile memory. See Marks at Col. 7, lines 34-41. Marks also discloses that physical devices are added by specifying a device type, a device name, and a SCSI location. See Marks at Col. 7, lines 14-24. This information stored in Marks is configuration information and is not "information about a state of the at least one storage device."

Configuration information and state information are not equivalent. Configuration information about a storage device may include a list of components and a volume definition. Applicants' specification at page 10, para. 29. State information, on the other hand, refers to the current state of the volume and/or the current state of the components. See Applicants' specification at page 10, para. 29. For example, state information may indicate whether a device is in good or failed status. See Applicants' specification at page 11, para. 29.

Second, Marks clearly does not disclose a "means for storing information about a state of the at least one storage device" since the only state information disclosed in Marks is with respect to the current state of the controllers, not the storage devices. See Marks at Col. 8 lines 42-50. This state information in Marks is in the form of "signals" used by each controller to sense the absence or presence of the other

controller. See Marks at Col. 8 lines 42-50. In addition, there is no indication in Marks that the information contained in these signals, which is not storage device state information, is stored in parameter store 56. Therefore, Applicants respectfully submit that claim 14 is not anticipated by Marks.

Claim 20

Claim 20 is a computer-readable medium claim reciting similar elements to system claim 14. As shown above, Marks does not disclose "storing information about a state of the at least one storage device in a virtualization database," as recited in claim 14. Therefore, Applicants respectfully submit that claim 20 is not anticipated by Marks.

Accordingly, it is respectfully submitted that claims 14 and 20 patentably distinguish over Marks, and the rejection of claims 14 and 20 under 35 U.S.C. § 102 should be withdrawn. The rejections of claims 15-19 and 21-25 under 35 U.S.C. § 102 should also be withdrawn for at least the same reasons since they depend from claims 14 and 20.

Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1-13 under 35 U.S.C. § 103(a) as being unpatentable over Marks in view U.S. Patent No. 5,539,875 ("Bishop"). To establish a prima facie case of obviousness, three basic criteria must be met. MPEP § 2143. First, there must be some suggestion or motivation, either in the reference or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings. *Id.* Second, there must be a reasonable expectation of success. *Id.* Finally, the prior art reference as

modified must teach or suggest all the claim elements. *Id.* This rejection of claims 1-13 under 35 U.S.C. § 103 should be withdrawn because a *prima facie* case of obviousness has not been established based on Marks in view of Bishop.

Claim 1

Neither Marks nor Bishop, alone or in combination, teach or suggest “storing information about a state of the at least one storage device in a virtualization database that is distributed across more than one processor in the virtualization layer,” as in Applicants' independent claim 1. The foregoing arguments with respect to the rejection of claims 14 and 20 demonstrate that Marks does not teach or suggest “storing information about a state of the at least one storage device in a virtualization database.” Bishop does not make up this deficiency of Marks since Bishop is not directed to a storage system containing virtualization, where a virtual device is represented to the host and the virtualization system translates the host's I/O request to virtual devices into the physical addresses required to allow the host to access data stored on physical devices. See Marks Col. 6 lines 50-53. Bishop is directed to a hierarchical cache system and not to a storage virtualization system and therefore does not disclose, teach, or suggest the aforementioned element of claim 1. See Bishop Col. 1, lines 21-40.

In addition, the Examiner cites to Marks at Col. 8, lines 42-50 as disclosing “establishing a state manager for each of the more than one processors, wherein the state manager monitors the state of the at least one storage device.” However, as demonstrated in the foregoing arguments with respect to claims 14 and 20, Marks does not teach or suggest monitoring the state of the at least one storage device.

Marks teaches a method of monitoring the state of the controllers in a dual active redundant configuration. See Marks at Col. 8 lines 45-48. Bishop is not sufficient to make up this deficiency of Marks since Bishop, as noted above, is not directed to a storage virtualization system and therefore does not have a virtualization database. It follows that Bishop cannot monitor information stored in such a database.

Moreover, neither Marks nor Bishop, alone or in combination, teach or suggest, "halting long lived operations underway at the time the quiescence instruction is received, and completing short term operations comprising operations that are other than long lived operations and that are underway at the time the quiescence instruction is received," as in claim 1. Indeed, the Examiner concedes that Marks does not disclose a quiescence instruction. See Office Action at page 4. The Examiner cites to Col. 10, lines 10-43 in Bishop as disclosing the quiescence instruction of claim 1. *Id.* However, at this reference, Bishop discloses that when a quiesce occurs, stack error pointers are frozen, enqueue and dequeue pointers are advanced to the last transfer of the current operation, and send queue entries for which transfer has been initiated will complete their transfers. See Bishop at Col. 10, lines 14-20. There is no characterization in Bishop of these operations as either long lived or short term. In fact, in Bishop, when the system quiesces, all operations underway are completed as far as the quiesced level will permit, meaning that operations are completed as long as they do not require transfer to another level in the cache hierarchy. See Bishop Col. 7, lines 59-64. In Bishop, the decision to complete an operation when a quiesce occurs is not based on whether the operation is long lived or short term, but on whether the operation requires a transfer to another level in

the cache hierarchy. See Bishop Col. 7, lines 59-64. Therefore, Applicants respectfully submit that claim 1 is not rendered obvious by Marks in view of Bishop.

Claim 9

Claim 9 is a system claim reciting similar elements to method claim 1. As noted above, neither Marks nor Bishop, alone or in combination teach or suggest "a virtualization database storing information about a state of each of the plurality of storage devices," as recited in claim 9. Therefore, Applicants respectfully submit that claim 9 is not rendered obvious by Marks in view of Bishop.

Accordingly, it is respectfully submitted that claims 1 and 9 patentably distinguish over Marks in view of Bishop, and the rejection of claims 1 and 9 under 35 U.S.C. § 103 should be withdrawn. The rejections of claims 2-8 and 10-13 under 35 U.S.C. § 103 should also be withdrawn for at least the same reasons since they depend from claims 1 and 9.

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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